



SEQUENCE LISTING

<110> Kufer, et al.

<120> NOVEL METHOD FOR THE PRODUCTION OF ANTIHUMAN ANTIGEN
RECEPTORS AND USES THEREOF

<130> DEBE:017US

<140> 09/403,107

<141> 1999-10-14

<160> 169

<170> PatentIn Ver. 2.1

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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 106
Leu Tyr Glu Asn Asn Val Ile Thr Ile Asp Leu Val Gln
1 5 10

<210> 107
<211> 13
<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 107

Glu Asn Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser
1 5 10

<210> 108

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 108

Asn Val Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln
1 5 10

<210> 109

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 109

Ile Thr Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr
1 5 10

<210> 110

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 110

Ile Asp Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn
1 5 10

<210> 111

<211> 13

<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 111
Leu Val Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val
1 5 10

<210> 112
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 112
Gln Asn Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile
1 5 10

<210> 113
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 113
Ser Ser Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp
1 5 10

<210> 114
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 114
Gln Lys Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala
1 5 10

<210> 115
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 115
Thr Gln Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr
1 5 10

<210> 116
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 116
Asn Asp Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu
1 5 10

<210> 117
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 117
Val Asp Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp
1 5 10

<210> 118
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 118
Ile Ala Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys
1 5 10

<210> 119
<211> 13
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 119

Asp Val Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu
1 5 10

<210> 120

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 120

Ala Tyr Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu
1 5 10

<210> 121

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 121

Tyr Phe Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His
1 5 10

<210> 122

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 122

Glu Lys Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys
1 5 10

<210> 123

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 123

Asp Val Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met
1 5 10

<210> 124

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 124

Lys Gly Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu
1 5 10

<210> 125

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 125

Glu Ser Leu Phe His Ser Lys Lys Met Asp Leu Thr Val
1 5 10

<210> 126

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 126

Leu Phe His Ser Lys Lys Met Asp Leu Thr Val Asn Gly
1 5 10

<210> 127

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 127
His Ser Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln
1 5 10

<210> 128
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 128
Lys Lys Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp
1 5 10

<210> 129
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 129
Met Asp Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp
1 5 10

<210> 130
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 130
Leu Thr Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly
1 5 10

<210> 131
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 131
Val Asn Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr
1 5 10

<210> 132
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 132
Gly Glu Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile
1 5 10

<210> 133
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 133
Gln Leu Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr
1 5 10

<210> 134
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 134
Asp Leu Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp
1 5 10

<210> 135
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 135

Asp Pro Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys
1 5 10

<210> 136

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 136

Gly Gln Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro
1 5 10

<210> 137

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 137

Thr Leu Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe
1 5 10

<210> 138

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 138

Ile Tyr Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met
1 5 10

<210> 139

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 139

Tyr Val Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly

1 5 10

<210> 140
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 140
Asp Glu Lys Ala Pro Glu Phe Ser Met Gln Gly Leu Lys
1 5 10

<210> 141
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<220>
<221> CDS
<222> (1)..(321)

<400> 141
gag ctc cag atg acc cag tct cca tcc tcc ctg tct gct tct gtg gga 48
Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

gac aga gtc acc atc act tgt cgg aca agt cag agc att agc agc tat 96
Asp Arg Val Thr Ile Thr Cys Arg Thr Ser Gln Ser Ile Ser Ser Tyr
20 25 30

tta aat tgg tat cag cag aaa cca gga cag cct cct aag ctg ctc att 144
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile
35 40 45

tac tgg gca tct acc cgg gaa tcc ggg gtc cct gac cga ttc agt ggc 192
Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly
50 55 60

agc ggg tct ggg aca gat ttc act ctc acc atc agc agt cta caa cct 240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

gaa gat tct gca act tac tac tgt cag cag agt tac gac atc ccg tac 288
Glu Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Asp Ile Pro Tyr
85 90 95

act ttt ggc cag ggg acc aag ctg gag atc aaa 321
Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys

<210> 142
 <211> 107
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 142

Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
1				5				10						15		
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Thr	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	
			20					25					30			
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile	
		35				40						45				
Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	
	50					55					60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
	65				70					75					80	
Glu	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Asp	Ile	Pro	Tyr	
				85				90						95		
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Leu	Glu	Ile	Lys						
				100				105								

<210> 143
 <211> 414
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<220>

<221> CDS

<222> (1)..(414)

<400> 143

gag	gtg	cag	ctg	ctc	gag	tct	ggg	gga	ggc	gtg	gtc	cag	cct	ggg	agg	48
Glu	Val	Gln	Leu	Leu	Glu	Ser	Gly	Gly	Gly	Val	Val	Gln	Pro	Gly	Arg	
1				5				10						15		
tcc	ctg	aga	ctc	tcc	tgt	gca	gcc	tct	gga	ttc	acc	ttc	agt	agc	tat	96
Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	
			20					25					30			

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ggc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg 144
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
      35                40                45

gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg 192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
      50                55                60

aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
      65                70                75                80

ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
      85                90                95

gcg aaa gat atg ggg tgg ggc agt ggc tgg aga ccc tac tac tac tac 336
Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr
      100                105                110

ggt atg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca gca 384
Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala
      115                120                125

ccc acc aag gct ccg gat gtg ttc cct cta 414
Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
      130                135

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<210> 144

<211> 138

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 144

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Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
  1                5                10                15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
      20                25                30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
      35                40                45

Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
      50                55                60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
      65                70                75                80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
      85                90                95

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Ala Lys Asp Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr
100 105 110

Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala
115 120 125

Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
130 135

<210> 145

<211> 372

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<220>

<221> CDS

<222> (1) .. (372)

<400> 145

gag gtg cag ctg ctc gag tct ggg gga gtc gtg gta cag cct ggg ggg 48
Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
1 5 10 15

tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt gat gat tat 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
20 25 30

gcc atg cac tgg gtc cgc cag gct cca ggc aag ggg ctg gag tgg gtg 144
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gca gtt ata tca tat gat gga agt aat aaa tac tat gca gac tcc gtg 192
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aat tcc aag aac acg ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gct gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg aaa aag gaa ggc tac tgg ggc cag gga acc ctg gtc acc gtc tcc 336
Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110

tca gca ccc acc aag gct ccg gat gtg ttc cct cta 372
Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
115 120

<210> 146
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 146
Glu Val Gln Leu Leu Glu Ser Gly Gly Val Val Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
20 25 30
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Lys Lys Glu Gly Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
100 105 110
Ser Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Leu
115 120

<210> 147
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<220>
<221> CDS
<222> (1)..(321)

<400> 147
gag ctc cag atg acc cag tct cca tcc tcc ctg tct gca tct gta gga 48
Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15
gac aga gtc acc atc act tgc cgg gca agt cag agc att agc agc tat 96

<210> 149
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 149
agggtgcagct gctcgagtct gg 22

<210> 150
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 150
cagagtcacc ttgctcgagt ctgg 24

<210> 151
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 151
caggtgcagc tgctcgagtc ggg 23

<210> 152
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 152
caggtgcagc tactcgagtg ggg 23

<210> 153
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 153
 caggtacagc tgctcgagtc agg 23

<210> 154
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 154
 tgccttactg tctctggcca gcggaagat 29

<210> 155
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 155
 gagccgcacg agcccgcagct ccagatgacc cagtctcc 38

<210> 156
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 156
 gagccgcacg agcccgcagct cgtgattgac agcagtctcc 40

<210> 157
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 157

gagccgcacg agcccgagct cgtgatgacc tcagtctcc 39

<210> 158
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
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 Primer

<400> 158
 gagccgcacg agcccgagct cacactcacg cagtctcc 38

<210> 159
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 159
 gagccgcacg agcccgagct cgtgctgact cagtctcc 38

<210> 160
 <211> 58
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 160
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<210> 161
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 161
 aattttgagc tcactcagcc ccac 24

<210> 162
 <211> 27

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 162
 tctgccgagc tccagcctgc ctccgtg 27

 <210> 163
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 163
 tctgtggagc tccagccgcc ctcaagt 27

 <210> 164
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 164
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 <210> 165
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 165
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 <210> 166
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic

Primer

<400> 166
cagactgagc tcactcagga gccc 24

<210> 167
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 167
cagggtgagc tcactcaacc gccc 24

<210> 168
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 168
caggctgagc tcactcagcc gtcttcc 27

<210> 169
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 169
cgccgtctag aattatgaac attctgtagg 30